

WHAT WE CLAIM IS:

5           1.    A catheter assembly comprising:  
                  at least one tube,  
                  a companion member, and  
                  an engagement member connecting said tube  
and said companion member to one another along a zone of  
said tube,

10                   said tube and said companion member  
extending proximal of said zone by an amount sufficient  
to extend out of the body of a patient in whom the  
catheter is embedded,

15                   removal of said engagement member causing  
said tube and said companion member to disconnect and  
permit separate non-surgical withdrawal of said tube and  
said companion member from a patient.

              2.    The catheter assembly of claim 1 further  
comprising:

5                   a flexible separating prong extending  
outward from the surface of one of said tube and  
companion member to abut the surface of the other at a  
location proximal of said zone to force said tube and  
companion member to diverge away from said zone.

              3.    The catheter assembly of claim 1 wherein:  
                  said engagement member is a wire  
extending proximally to a position outside the patient  
when the catheter is implanted in a patient,

5                   said wire having a proximal end, said  
wire being removable by pulling on said proximal end.

4. The catheter assembly of claim 2 wherein:  
said engagement member is a wire  
extending proximally to a position outside the patient  
when the catheter is implanted in a patient,  
5 said wire having a proximal end, said  
wire being removable by pulling on said proximal end.

5. The catheter assembly of claim 1 wherein:  
said engagement member is a set of two  
wires extending proximally to a position outside the  
5 patient when the catheter is implanted in a patient,  
said wires each having a proximal end,  
said wires being removable by pulling on said proximal  
end.

6. The catheter assembly of claim 2 further  
comprising:

5 a recess on the surface of said tube or  
companion member against which said prong abuts, said  
recess engaging the abutting end of said prong to hold  
said prong in place.

7. A multiple tube catheter assembly having  
first and second tubes connected to one another at a  
predetermined zone, the improvement comprising:

5 a wire extending longitudinally within  
said tubes and passing through surfaces of said tubes at  
said zone to hold said tubes together at said zone,

said tubes being disconnected by  
withdrawal of said wire.

8. The catheter of claim 7 wherein said wire  
is removable by pulling on a proximal end of said wire.

9. The catheter of claim 7 wherein said wire  
is a surgical suture.

10. The catheter of claim 7 wherein: said predetermined zone is located on the catheter to be within a patient when the catheter is implanted in a patient.

11. The catheter of claim 7 wherein said wire extends proximally within the sidewall of one of said tubes to a predetermined position within said sidewall outside of the patient when the catheter is implanted in a patient.

12. The catheter of claim 7 further comprising:

a flexible separating prong extending outwardly from the surface of one of said tubes to abut a surface of the other one of said tubes at a location close to and proximal of said zone, to force said tubes to diverge away from said predetermined zone.

13. The catheter of claim 11 further comprising:

a flexible separating prong extending outwardly from the surface of one of said tubes to abut a surface of the other one of said tubes at a location close to and proximal of said zone, to force said tubes to diverge away from said predetermined zone.

14. The catheter of claim 12 wherein: said predetermined zone and said prong are both located on the catheter to be within a patient when the catheter is implanted in a patient.

15. The catheter of claim 7 further comprising:

5 a second wire extending longitudinally within said tubes and passing through the connected surfaces of said tubes to hold said tubes together at said zone,

withdrawal of said second wire required to disconnect said tubes.

16. The catheter of claim 11 further comprising:

5 a second wire extending longitudinally within said tubes and passing through the connected surfaces of said tubes to hold said tubes together at said zone,

withdrawal of said second wire required to disconnect said tubes.

17. The catheter of claim 12 further comprising:

5 a second wire extending longitudinally within said tubes and passing through the connected surfaces of said tubes to hold said tubes together at said zone,

withdrawal of said second wire required to disconnect said tubes.

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18. The catheter of claim 14 further comprising:

5 a second wire extending longitudinally within said tubes and passing through the connected surfaces of said tubes to hold said tubes together at said zone,

withdrawal of said second wire required to disconnect said tubes.

19. The catheter of claim 12 further comprising: a recess on the sidewall of said other one of said tubes to receive the end of said separating prong.

20. The catheter of claim 14 further comprising: a recess on the sidewall of said other one of said tubes to receive the end of said separating prong.

21. The catheter of claim 18 further comprising: a recess on the sidewall of said other one of said tubes to receive the end of said separating prong.

22. The catheter of claim 7 wherein: said connected surfaces of said tubes at said zone are flat.

23. The catheter of claim 12 wherein: said connected surfaces of said tubes at said zone are flat.

24. The catheter of claim 14 wherein: said connected surfaces of said tubes at said zone are flat.

25. The catheter of claim 15 wherein: said connected surfaces of said tubes at said zone are flat.

26. The catheter of claim 16 wherein: said connected surfaces of said tubes at said zone are flat.

27. The catheter of claim 12 further comprising: a reinforcing wire within said prong 27.

28. A multiple tube catheter assembly having first and second tubes connected to one another at a predetermined zone comprising:

first and second wires extending longitudinally within the sidewalls of said tubes at said zone and passing through the connected surfaces of said tubes to hold said tubes together at said zone, and wherein said connected surfaces of said tubes at said zone are flat, abutting surfaces,

said wires extending proximally within the sidewall of one of said tubes to a predetermined position within said sidewall, said predetermined position being outside of the patient when the catheter is implanted in a patient,

a flexible separating prong extending outwardly from the surface of one of said tubes to abut a surface of the other one of said tubes at a location close to and proximal of said zone, to force said tubes to diverge away from said predetermined zone, and

a recess in the sidewall of said other one of said tubes to receive the end of said separating prong,

said predetermined zone and said prong being located on the catheter to be within a patient when the catheter is implanted in a patient.

29. The catheter of claim 28 further comprising: a reinforcing wire within said prong.

30. The method of retaining and removing a catheter tube in a patient comprising the steps of:

implanting a catheter having a zone in which the catheter tube and a companion member are stitched together with a longitudinal wire wherein the zone is positioned in the patient and the wire extends to a point outside the patient, said zone retaining the catheter in the patient, and

removing the catheter by accessing a proximal portion of said wire, withdrawing said wire and individually removing the catheter tube and the companion member.

31. The method of retaining and removing a multiple tube catheter in a patient comprising the steps of:

implanting a catheter having a zone in which at least two tubes are stitched together with a longitudinal wire wherein the zone is positioned in the patient and the wire extends to a point outside the patient, said zone retaining the catheter in the patient, and

removing the catheter by accessing a proximal portion of said wire, withdrawing said wire and individually removing each of said tubes.

32. The method of claim 31 further comprising the steps of:

during said step of implanting the catheter, providing a separating flexible prong proximal of said zone extending from a first one of said tubes into a recess on the second one of said tubes to hold said tubes apart to prevent distal movement of the catheter, and

during said step of removing the catheter, removing said prong from said recess.

33. The method of implanting and removing a multiple tube catheter implanted in a patient comprising the steps of:

providing a multiple tube catheter assembly, having first and second tubes and a wire extending longitudinally within the sidewalls of said tubes along a predetermined zone and passing through contacting surfaces of said tubes at said zone to hold said tubes together at said zone, said wire extending proximally within the sidewall of said first one of said tubes to a predetermined proximal position,

implanting said assembly in a patient with said zone within the patient and the proximal ends of said wire extending outside of the patient,

accessing the proximal end of said wire,

removing said wire from said catheter to disconnect said tubes at said zone, and

then individually removing each of said multiple tubes from the patient.



34. The method of claim 33 wherein said step of removing comprises pulling on said wire.

FOOTNOTES